

**949,034.**

Patented Feb. 15, 1910.  
3 SHEETS—SHEET 1.



Witness  
J. M. Fallon.

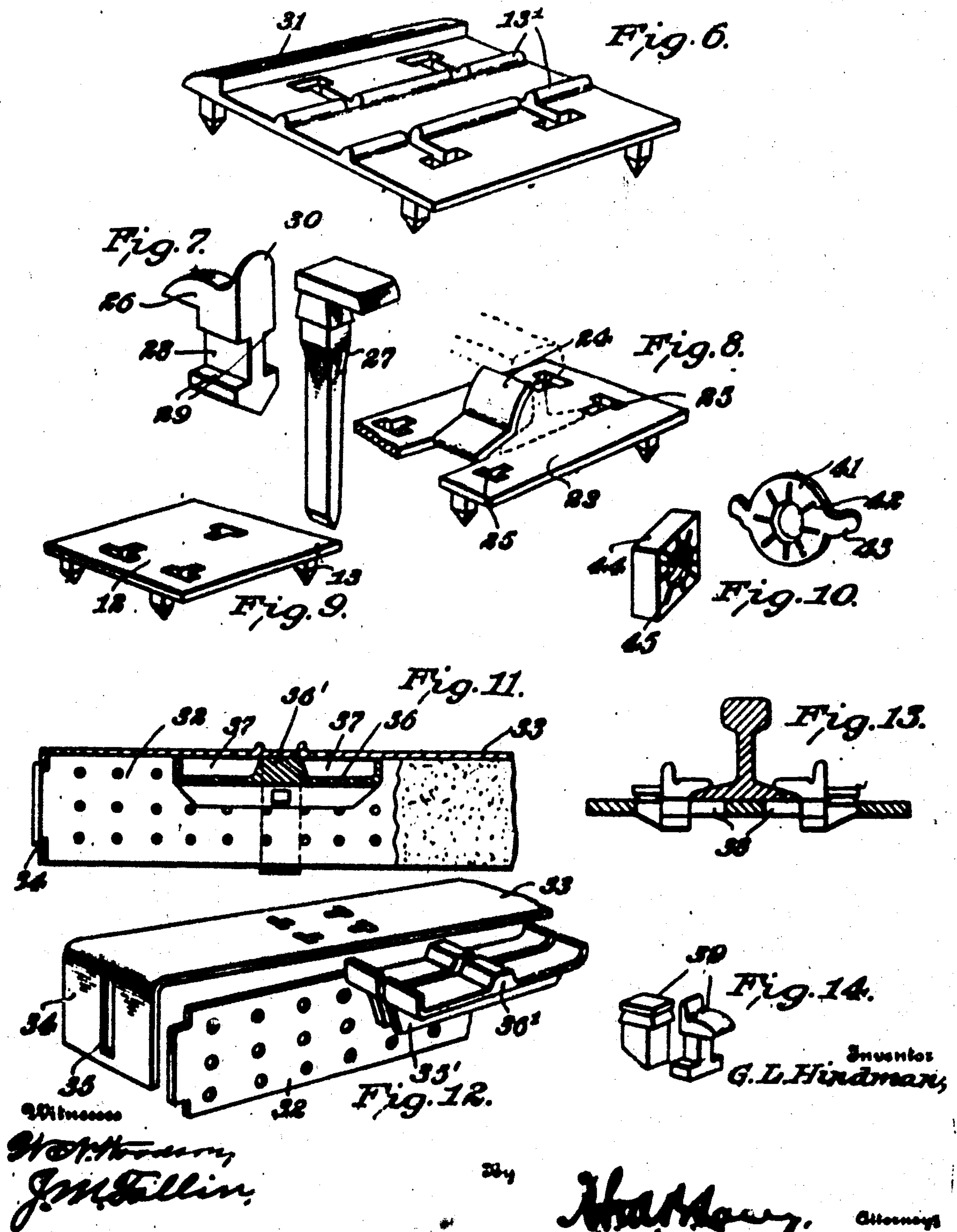


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RAIL TIE FASTENER.  
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# UNITED STATES PATENT OFFICE.

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## RAIL-TIE FASTENER.

949,034.

Specification of Letters Patent.

Patented Feb. 13, 1910.

Application filed March 27, 1909. Serial No. 456,290.

*To all whom it may concern:*

Be it known that I, GEORGE L. HINDMAN, citizen of the United States, residing at Worthington, in the county of Armstrong and State of Pennsylvania, have invented certain new and useful Improvements in Rail-Tie Fasteners, of which the following is a specification.

This invention relates to railway ties, and more particularly to an improved tie plate or chair for preventing spreading or creeping of the rails at the joints thereof.

The object of the invention is to provide a strong, durable and thoroughly efficient device of the character described, adapted to rest on the cross tie beneath the base of the rail, and by means of which spreading or creeping of the rails incident to the passage of trains and other railway rolling stock, is positively prevented.

A further object is to provide improved means for locking the rail in position on the tie plate, and means for securing the latter to the adjacent cross tie.

A further object is to provide means for maintaining the cross ties in spaced parallel relation, and means carried by the tie spacing means for engagement with the bars or fish plates of adjacent rail sections.

A still further object of the invention is generally to improve this class of devices so as to increase their utility, durability, and efficiency.

For a full understanding of the invention and the merits thereof, and to acquire a knowledge of the details of construction, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a clamping tie constructed in accordance with my invention; Fig. 2 is a perspective view of the tie plate detached; Fig. 3 is a perspective view of the clamping member used in connection with the tie plate, the fastening device or spike being shown near said clamping member; Fig. 4 is a transverse sectional view of Fig. 1; Fig. 5 is a perspective view of a portion of the spacing bar or tie chair detached; Fig. 6 is a perspective view illustrating a modified form of tie plate; Fig. 7 is a perspective view of the clamping member and spike used in connection with the tie plate shown in Fig. 6; Fig. 8 is a perspective view of a tie plate specially designed for placing rails at the curve in a track; Fig. 9

is a perspective view of a tie plate illustrating a further modification; Fig. 10 is a perspective view of one of the clamping nuts in Fig. 1 detached; Fig. 11 is a longitudinal sectional view illustrating a concrete tie; Fig. 12 is a detail perspective view of one end of the cross tie shown in Fig. 11, the reinforcing bar and pocket-forming plate being shown detached; Fig. 13 is a transverse sectional view of a tie plate specially designed for compensating for any lateral movement of the rail; Fig. 14 is a detail perspective view of clamping devices used in connection with the plate shown in Fig. 13; Fig. 15 is a perspective view illustrating a further modified form of the plate.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The improved tie plate forming the subject matter of the present invention is shown in connection with a section of railway track in which 5 designates the cross ties, and 6 and 7 the abutting ends of adjacent rail sections.

The cross ties 5 are maintained in parallel relation to each other by means of a spacing member 8, preferably cast, stamped or otherwise formed of metal and provided with a plurality of depressions or pockets 9 adapted to receive the adjacent cross ties 5, the proper spacing of the cross ties being effected by the intermediate connecting webs 10, as shown. The pockets 9 may be of different sizes to accommodate one or more cross ties, and in Fig. 5 of the drawing, the spacing bar is shown extended longitudinally between adjacent connecting webs to produce a pocket 9' capable of accommodating two cross ties.

The opposite longitudinal edges of the connecting webs 10 are bent upwardly and inwardly to form overhanging flanges 11 which bear against and serve to assist in clamping the angle bars or fish plates of the adjacent rails in position thereon, and also serve to reinforce and strengthen the spacing member. If desired the flanges 11 of some of the connecting webs may be omitted and the metal at said webs extended laterally and provided with slots or openings 10' for the reception of suitable fastening devices.

Interposed between the cross ties and the rail sections, preferably at the abutting ends



thereof, is a tie plate 12, the latter being substantially rectangular in shape, and provided with depending spurs or anchoring devices 13 adapted to be driven or otherwise embedded in the cross tie 5, thereby to prevent accidental displacement of the same. The metal forming the tie plate or chair 12 is cast, upstruck, or otherwise formed with spaced parallel guide ribs or flanges 13' defining a seat for the reception of the base of the adjacent rail section, there being spaced elongated openings 14 formed in the plate and intersecting the adjacent guiding rib 13' for the reception of suitable clamping members 15.

The clamping members 15 are provided with spaced lateral projections 16 and 17 adapted to bear against the angle bars of the adjacent rail sections and the bottom of the tie plate 12 respectively, there being suitable openings or recesses formed in the adjacent cross tie 5 for the reception of said clamping members. Each clamping member 15 is provided with a shoulder 18 which forms a stop for a spike or similar fastening device 19 used in connection with the clamping member for the purpose of locking the latter in operative position. The upper end or head of the clamping member 15 is provided with a V-shaped depression 20 defining a vertically disposed lip 21 adapted to be bent downwardly in engagement with the head of the spike 19, when the latter is driven into the cross tie, and thus prevent withdrawal of the same. The body of the plate 12 is also preferably cast, stamped or otherwise formed with an upwardly extending brace 22 adapted to bear against the head of the rail, as shown. Thus it will be seen that by inserting the clamping members 15 in the recesses in the cross tie, and moving said clamping devices laterally in the direction of the rail, the projections 16 and 17 will embrace the flange of the rail and base of the tie plate 12 respectively, and in which position, they will be effectually locked by means of the spikes or fastening devices 19.

It will, of course, be understood that the spike will be driven into the cross tie after the clamping member is positioned on the tie plate, with a portion of the head of the spike bearing against the shoulder 18, and another portion thereof bearing against the tie plate 12.

Attention is here called to the fact that the spike 19 not only serves to retain the clamping member in operative position, but also assists in preventing accidental movement of the tie plate 12, said spike being locked against accidental withdrawal by bending or pressing the lip 21 of the clamping device downwardly in engagement with the head of the spike, as best shown in Fig. 4 of the drawings.

The spike 19 is preferably formed at its upper end with an angular shoulder 23 so as to permit the application of a claw bar or other suitable tool to facilitate removing said spike when it is desired for any purpose to detach the tie plate.

When fastening the tracks on curves and the like, the tie plate indicated at 23 in Fig. 8 of the drawings, is preferably employed.

The tie plate 23 is stamped, cast or otherwise formed of a single sheet of metal, one end of which is bent rearwardly and upwardly to form a curved brace 24 adapted to bear against the head of the adjacent rail section to assist in preventing tilting or turning movement of the rail during the passage of trains thereover. In this form of the device, one or more T-shaped openings 25 are formed in one or both ends of the tie plate for the reception of a clamping member 26 and a fastening member or spike 27, the two co-acting to lock the rail in position on the tie plate. The fastening device 26 is provided with an intermediate reduced portion 28 adapted to enter the reduced portion of the adjacent slot 25, there being stop shoulders 29 formed at the opposite sides of the intermediate reduced portion 28, and adapted to engage the upper and lower surfaces of the tie plate 23 when said clamping member is in position on the cross tie. In using this form of the device, the clamping member or key 26 is inserted in the rear end of the opening 25, and then moved laterally within the reduced portion of said opening, and in which position, the shoulders 29 will engage the upper and lower surfaces of the tie plate, while the overhanging head of the clamping member will bear against the fish plate or angle bar of the adjacent rail. The spike or adjacent fastening device 27 is then inserted in the rear end of the opening 25, and driven with a mallet or other suitable tool into the cross tie, said spike bearing against the adjacent longitudinal edge of the clamping member and retaining the latter in operative position with respect to the tie and angle bars. The fastening device or spike 27 is preferably large enough to snugly fit within the large end of the opening 25, so as to render it almost impossible for the clamping member 26 to become accidentally dislodged. It will, of course, be understood that the lip 30 will be pressed downwardly in engagement with the head of the spike, after the latter is driven into the cross tie, in the same manner as the clamping member shown in Fig. 1 of the drawings.

In Fig. 6 of the drawings there is illustrated a modified form of the invention, in which one end of the plate is provided with a transverse reinforcing rib or shoulder 31 which bears against and serves to assist in



preventing accidental displacement of the adjacent clamping members, there being a plurality of spaced T shaped slots or openings formed in the tie plate on each side of the guiding ribs 13', to permit the insertion of clamping members and fastening devices or spikes of a construction similar to the fastening devices and spikes shown in Fig. 3 of the drawings. If desired, however, instead of forming spaced T shaped slots in the opposite ends of the tie plate, two of said slots may be formed in one end thereof, and a single slot in the other, as best shown in Fig. 9 of the drawings.

The several tie plates above referred to, are principally designed for use in connection with wooden cross ties, but the same may be used with equally good results in connection with a reinforced concrete tie, and in Figs. 11 and 12 of the drawings, the same is shown in connection with such a tie. In the form of the device shown in Fig. 11 of the drawings, the body of the tie is formed of cement, concrete or other plastic material, and is reinforced and strengthened by the provision of a longitudinally disposed bar 32 having perforations formed therein to assist in binding the parts together, the upper or active face of the tie being covered by a metal plate 33, and the opposite ends thereof bent downwardly at 34 and provided with vertical slots or recesses 35 through which project the adjacent ends of the longitudinally disposed perforated bar 32. In constructing the tie shown in Fig. 11 of the drawings, a sectional casing or boxing 36 is preferably positioned on the opposite sides of the longitudinal reinforcing member 32, each casing section being provided with an attaching flange 35' and a reinforcing web 36', thereby to form pockets or chambers 37 for the reception of the tie clamping members and fastening devices. By forming the tie with the pockets or recesses 37, the fastening devices and clamping members may be readily removed without the necessity of breaking or fracturing the body of the tie. If desired, however, the casing 36 may be dispensed with, and the opening or cavity formed directly in the body of the cement, during the formation of the tie.

In order to take up any lateral movement of the rails due to pounding or other causes, the reduced portions of the openings of the tie plates may be elongated and extended under the base of the rail, as indicated at 38 in Fig. 13 of the drawings, to permit the insertion of a plurality of clamping members 39, which clamping members may be formed with or without the bendable lips for engagement with the adjacent spikes or fastening devices. By providing several fastening devices in each slot, should it be desired to adjust the rail laterally of the cross tie,

the same may be effected by removing one of the fastening devices on one side of the tie plate, and shifting the rail laterally on the tie plate a distance equal to the space formed by the removed fastener and then positioning said removed fastener in the elongated slot on the other side of the tie plate, as will be readily understood. Provision is also made for preventing turning movement of the ends of the clamping bolts 40 used for locking the fish plates in engagement with the adjacent rail sections, the same consisting of a washer 41 having a series of radiating ribs 42 formed on one side at the bolt receiving opening and provided on its opposite side with yieldable fingers or ears 43 for engagement with the fish plate in the usual manner. The inner face of the nut 44 is provided with radiating slots 45 adapted to register with and receive the ribs on the washer 41 so that when the nut is adjusted on the bolt, the spring fingers will force the ribs into engagement with the grooves and thus lock the nut against accidental rotation. If desired, however, the position of the radiating ribs and grooves may be reversed, that is to say, the ribs may be formed on the nut, and the grooves in the washer, without departing from the spirit of the invention.

In Fig. 15 of the drawings there is illustrated a modified form of tie plate in which the enlarged ends of the slots 14' are extended in the same direction. This form of tie plate may be used with or without the curved brace, as desired.

Having thus described the invention, what is claimed as new is:

1. The combination with a cross tie and rail, of a tie plate interposed between the cross tie and rail and provided with depending spurs adapted to be driven into the cross tie, spaced guiding ribs secured to the upper surface of the tie plate, there being openings formed in the tie plate on one side of each rib, clamping members having spaced projections arranged to embrace the flange of the rail and the bottom of the tie plate respectively, and fastening devices co-acting with the clamping members for locking the latter in operative position, the upper portions of the clamping members being adapted to be bent downwardly in engagement with the fastening devices.

2. The combination with a cross tie and rail, of a tie plate interposed between the cross tie and rail and provided with an opening, a fastening device seated in said opening and having one side thereof provided with lateral projections adapted to bear against the rail and bottom of the tie plate respectively, and its opposite side formed with a shoulder, and a fastening device having a head, a portion of which is adapted to bear against the shoulder and another por-



tion thereof arranged to engage the upper surface of the tie plate.

3. The combination with a cross tie and rail, of a tie plate interposed between the cross tie and rail and provided with an opening, a clamping member seated in said opening and having one side thereof provided with lateral projections arranged to embrace the rail and bottom of the tie plate respectively, and its opposite side formed with a stop shoulder, there being a depression formed in the top of the clamping member and defining a bendable lip, and a spike having a head, a portion of which is adapted to bear against the shoulder, and another portion thereof against the tie plate, the lip being adapted to be bent downwardly in contact with the head after the spike has been driven home.

4. A tie plate formed of a single piece of metal having spaced parallel guiding ribs formed on one face thereof and provided on its other face with depending anchoring spurs one of which is disposed at each cor-

ner of the plate, and a brace integral with the plate and extending upwardly from the ribbed face thereof, there being spaced openings formed in the plate between each longitudinal edge and the adjacent guiding rib and intersecting the latter.

5. The combination with spaced cross ties having rails secured thereon, of a metallic spacing member having pockets formed therein for the reception of adjacent cross ties and provided with intermediate connecting webs having integral up-struck vertical flanges arranged to embrace the adjacent rails, some of said connecting webs being extended laterally in a horizontal plane beyond the adjacent longitudinal edges of the spacing member and provided with openings for the reception of fastening devices.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE L. HINDMAN. [L. S.]

Witnesses:

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